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THE U.S. INERTIAL CONFINEMENT PROGRAM: STATUS AND FUTURE PLANS

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The mission of the U.S. ICF Program is twofold: 1) to develop a laboratory microfusion capability for defense and energy applications, and 2) to address important high energy density physics issues relevant to defense and other areas. The ICF Program works to fulfill this mission by providing a state-of-the-art capability to investigate high energy density physics in the laboratory. In this talk, an overview of the Program's current activities and future plans will be presented.

Current activities in the Program may be subdivided as follows: a) ignition physics and related technology, b) other high energy density science activities, and c) advanced driver development. Ignition physics activities are focused on resolving the scientific and technical questions necessary to demonstrate ignition on the proposed National Ignition Facility (NIF). This includes laser and pulsed-power based target physics research in the areas of hydrodynamics, drive energetics and symmetry, plasma physics, and ignition target design. Issues relevant to both direct and indirect drive are under study, as the NIF is designed to be capable of operation in both of these modes. Also critical to the ignition effort is ongoing work in laser and target area technology development, target area technology, and target fabrication. A general overview of progress towards ignition and plans for future work will be presented.

The Program also maintains an active program of research in other areas of high energy density science. Significant progress has been made in expanding the uses of the Program's laser and pulsed power facilities for research in this area. Of particular importance for the Program's defense mission is the study of areas such as opacity, radiation flow, and hydrodynamics. Recent results from the Program's high energy density physics research effort will be shown, as will a summary of the Program's efforts to develop a laser or pulsed power driver for a next generation high yield facility following the NIF.

With the planned demonstration of laboratory ignition and continued activities in other areas, the next five to ten years should be an especially fruitful period for inertial fusion. An overview of the Program's general plans for this time frame and the relation of the Program's efforts to other U.S. Dept. of Energy activities will also be presented.

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